REMARKS

Claims 1-9 and 11-80 are currently pending. Applicant has amended claims 1, 6, 8, 11-13, and 21, and 41, added claims 64-80, and canceled claim 10.

Applicant wishes to thank the Examiner for his consideration during the telephone conference on December 21, 2005. During the telephone conference, the Examiner and applicant's representatives discussed the invention and the cited reference McDonald.

The Examiner has rejected claims 1-63 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Examiner's basis for rejecting these claims is, in part, because they "do not constitute a manipulation of tangible physical objects and result in the object having a different physical structure or attribute." (Examiner's Action, August 17, 2005, p. 2.) Applicant would like to direct the Examiner's attention to the Federal Circuit's decision in *State Street Bank*, in which the Court stated "after *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers and storing numbers, in and of itself, would not render it non-statutory . . . " *State Street Bank &Trust Co. v. Signature Financial Group Inc., 149 F. 3d 1368, 47 USPQ2d 1596(Fed. Cir. 1998)*. In addition, the Federal Circuit has recently noted that a "structural inquiry is unnecessary" when determining whether a process claim is eligible for patent protection." *AT&T Corp. v. Excel Communications, Inc., 172 F.3d1352, 50 USPQ2d 1447 (Fed. Cir. 1999)*. Therefore, applicant respectfully submits that the claimed invention is directed to statutory subject matter because it produces a "useful, concrete and tangible result ." (See, "interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility," Official Gazette Notices, November 22, 2005).

The Examiner has rejected claims 1-63 under 35 U.S.C. 102(b) as being anticipated by McDonald. Even though applicant respectfully disagrees with the Examiner's position, applicant has amended claims 1 and 41 to further clarify the claimed invention.

Applicant's technique is directed to calculating a defect type score that represents the current condition of a segment of pipe (e.g., 100 feet of pipe). According to applicant's technique, a defect type and an extent based on defects of that defect type are provided. The defect type has a category, a form, and a severity. For example, a defect type can be a longitudinal (i.e., the form) fracture (i.e., the category) less than 10mm wide (i.e., the severity). The extent of the defect type may be 30 feet. For the defect type, a defect type score range is defined between a base defect type score and a maximum defect type score (e.g., from 10 to 80 for the longitudinal fracture < 10mm). In the longitudinal fracture example, the maximum extent is the total length of the pipe segment, which corresponds to the maximum defect type score. A score within the defect type score range can then be calculated based on a relationship between the extent and the maximum extent. For example, the defect type score for the pipe segment having the longitudinal fracture < 10mm wide would be 10+(80-10)x(30 feet/100 feet) = 34, if linear interpolation is used.

After all defect type scores are calculated for defects found in the segment, a grade for the segment can be calculated based on a root-mean-square combination of a highest defect type score of the defect types and an average defect type score of the remaining defect types, based on a geometrically smaller weight being used from the highest defect type score to the lowest defect type score of the pipe, or based on a highest defect type score of the pipe combined with a secondary score derived from remaining defect type scores of the pipe.

McDonald describes a technique for assessing conditions of sewer pipes by systematically defining a set of defect types and scores. Each defect type is defined by a category, a form, and a severity. Each defect type carries a code (Low, Medium, and Maximum) with a corresponding score assigned (See Tables 2 and 3). For example, a longitudinal fracture less than 10mm wide is defined with a code of "FLL" (i.e., Fracture Longitudinal Low) having a score of 5 (see Table 3). After a segment is inspected, a peak score is selected, and a total segment score is derived by summing all the individual scores (see Table 5). For example, if there are 6 FLL defects, then the total segment

score would be 30. Then, a condition state for the segment is assigned based on the peak score (see Tables 6 and 7).

McDonald does not teach or suggest "providing a defect type score range ... and a maximum extent that is specific to the defect type," and "calculating a score for the defect type ... based on a relationship between the extent of the defect type and the maximum possible extent of the defect type," as recited in claims 1-9, 11-21, and 41-49. Instead, McDonald teaches assigning a single score to each defect based on category, form, and severity of a defect type irrespective of the extent of the defect and deriving a total score by simply summing all the individual scores. Under McDonald's teachings, defects of the same defect types would have the same score and thus are not distinguished even though the defects have different extents. For example, two pipe segments with the same FLL code would have the same score of 5 even though one fracture in one segment might be ten times as long as the other fracture in the other segment. In addition, according to McDonald, a total score of a defect type is a sum of all the individual scores, which may not adequately reflect current conditions of the pipe. For example, 6 FLL defects would have a total score of 30 even though each defect is only 1 foot long, but a single FLL defect that is 50 feet long would only have a score of 5. Thus, McDonald neither teaches nor suggests providing a defect type score range and calculating a defect type score based on a relationship between an extent of the defect type and a maximum extent of the defect type as recited by claims 1-9, 11-21 and 41-49.

McDonald does not teach or suggest deriving a grade for the segment "based on a root-mean-square combination of a highest defect type score of the defect types and an average defect type score of the remaining defect types", "based on a geometrically smaller weight being used from the highest defect type score to the lowest defect type score of the pipe", or "based on a highest defect type score of the pipe combined with a secondary score derived from remaining defect type scores of the pipe", as recited in claims 22-40 and 50-63. In the present Office Action, the Examiner cited "Pooling scarce sewer condition data from various municipalities across Canada will enable the

development and verification of statistical models for assessing sewer deterioration and predicting its remaining service life" in McDonald as teaching the various methods of deriving the grade. McDonald neither teaches nor suggests applying any statistical techniques to grading pipes based on pipe defect type scores for a pipe segment, as recited in the pending claims. Instead, McDonald simply states that some kind of statistical models can be used to assess sewer deterioration across municipalities in Canada and does not provide any teachings or suggestions of how those models may work, what calculations they may perform, and what results may be obtained. Thus, McDonald neither explicitly nor inherently suggests grading pipes as recited by claims 22-40 and 50-63.

Newly added claims 64-73 recite "a component that provides a defect type score range from a base defect type score to a maximum defect type score, and a maximum extent that is specific to the defect type" and "a component that calculates a score for the defect type that is between the base defect type score and the maximum defect type score based on a relationship between the extent of the defect type and the maximum extent of the defect type" that is neither taught nor suggested by McDonald.

Newly added claims 74-80 recite "a component that calculates a grade for the manhole that is based one of a root-mean-square combination of a highest defect type score of the defect types and an average defect type score of the remaining defect types, a geometrically smaller weight being used from the highest defect type score to the lowest defect type score of the manhole, and a highest defect type score of the pipe combined with a secondary score derived from remaining defect type scores of the pipe" that is neither taught nor suggested by McDonald.

Based upon the above amendments and remarks, applicant respectfully requests reconsideration of this application and its early allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-8548.

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Respectfully submitted,

By _____

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